

~~09/643260~~
09/105117

Connecting via Winsock to STN

Trying 3106016892...Open

Welcome to STN International! Enter x:x

LOGINID:SSSPAT1600RXM

PASSWORD:

TERMINAL (ENTER 1, 2, 3, OR ?):2

***** Welcome to STN International *****

NEWS 1 Web Page URLs for STN Seminar Schedule - N. America
NEWS 2 Dec 17 The CA Lexicon available in the CAPLUS and CA files
NEWS 3 Feb 06 Engineering Information Encompass files have new names
NEWS 4 Feb 16 TOXLINE no longer being updated
NEWS 5 Apr 23 Search Derwent WPINDEK by chemical structure
NEWS 6 Apr 23 PRE-1967 REFERENCES NOW SEARCHABLE IN CAPLUS AND CA
NEWS 7 May 07 DGENE Reload
NEWS 8 Jun 20 Published patent applications (A1) are now in USPATFULL
NEWS 9 JUL 13 New SDI alert frequency now available in Derwent's
DWPI and DPCI
NEWS 10 Aug 23 In-process records and more frequent updates now in
MEDLINE
NEWS 11 Aug 23 PAGE IMAGES FOR 1947-1966 RECORDS IN CAPLUS AND CA
NEWS 12 Aug 23 Adis Newsletters (ADISNEWS) now available on STN
NEWS 13 Sep 17 IMSworld Pharmaceutical Company Directory name change
to PHARMASEARCH
NEWS 14 Oct 09 Korean abstracts now included in Derwent World Patents
Index
NEWS 15 Oct 09 Number of Derwent World Patents Index updates increased
NEWS 16 Oct 15 Calculated properties now in the REGISTRY/ZREGISTRY File

NEWS EXPRESS August 15 CURRENT WINDOWS VERSION IS V6.0c,
CURRENT MACINTOSH VERSION IS V6.0 (ENG) AND V6.0J (JP),
AND CURRENT DISCOVER FILE IS DATED 07 AUGUST 2001
NEWS HOURS STN Operating Hours Plus Help Desk Availability
NEWS INTER General Internet Information
NEWS LOGIN Welcome Banner and News Items
NEWS PHONE Direct Dial and Telecommunication Network Access to STN
NEWS WWW CAS World Wide Web Site (general information)

Enter NEWS followed by the item number or name to see news on that specific topic.

All use of STN is subject to the provisions of the STN Customer agreement. Please note that this agreement limits use to scientific research. Use for software development or design or implementation of commercial gateways or other similar uses is prohibited and may result in loss of user privileges and other penalties.

***** STN Columbus *****

FILE 'HOME' ENTERED AT 18:56:31 ON 19 OCT 2001

=> file biosis caplus embase medline scisearch		
COST IN U.S. DOLLARS	SINCE FILE	TOTAL
	ENTRY	SESSION
FULL ESTIMATED COST	0.15	0.15

FILE 'BIOSIS' ENTERED AT 18:57:06 ON 19 OCT 2001
COPYRIGHT (C) 2001 BIOSIS(R)

FILE 'CAPLUS' ENTERED AT 18:57:06 ON 19 OCT 2001
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2001 AMERICAN CHEMICAL SOCIETY (ACS)

FILE 'EMBASE' ENTERED AT 18:57:06 ON 19 OCT 2001
COPYRIGHT (C) 2001 Elsevier Science B.V. All rights reserved.

FILE 'MEDLINE' ENTERED AT 18:57:06 ON 19 OCT 2001

FILE 'SCISEARCH' ENTERED AT 18:57:06 ON 19 OCT 2001
COPYRIGHT (C) 2001 Institute for Scientific Information (ISI) (R)

=> s microbial (w) production
L1 2893 MICROBIAL (W) PRODUCTION

=> s L1 and (amino (w) acids)
L2 190 L1 AND (AMINO (W) ACIDS)

=> s L2 and Corynebacterium
L3 28 L2 AND CORYNEBACTERIUM

=> L3 and lysine
L4 13 L3 AND LYSINE

=> L3 and ((export) (w) (gene or carrier))
L5 0 L3 AND ((EXPORT) (W) (GENE OR CARRIER))

=> s L3 and export (w) gene
L6 0 L3 AND EXPORT (W) GENE

=> s export (w) gene
L7 166 EXPORT (W) GENE

=> s L3 and L7
L8 0 L3 AND L7

=> s L3 (p) L7
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'L13 (P) L37'
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'L14 (P) L38'
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'L15 (P) L39'
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'L16 (P) L40'
PROXIMITY OPERATOR LEVEL NOT CONSISTENT WITH
FIELD CODE - 'AND' OPERATOR ASSUMED 'L17 (P) L41'
L9 0 L3 (P) L7

```
=>
=> s L2 and L7
L10      0 L2 AND L7

=> s L2 and export (w) gene
L11      0 L2 AND EXPORT (W) GENE

=> s L7 and microb?
L12      61 L7 AND MICROB?

=> s L12 and Corynebacterium
L13      1 L12 AND CORYNEBACTERIUM

=> dup rem L3
PROCESSING COMPLETED FOR L3
L14      26 DUP REM L3 (2 DUPLICATES REMOVED)

=> dup rem L4
PROCESSING COMPLETED FOR L4
L15      13 DUP REM L4 (0 DUPLICATES REMOVED)
```

```
=> dis L13 ibib kwic
```

```
L13 ANSWER 1 OF 1 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1997:475788 CAPLUS
DOCUMENT NUMBER: 127:172154
TITLE: L-Lysine export from Corynebacterium
glutamicum. Physiological and molecular-biological
characterization of the carrier-mediated export of a
primary metabolite
AUTHOR(S): Vrljic, Maria-Marina
CORPORATE SOURCE: Inst. Biotechnologie, Forschungszentrum Julich
G.m.b.H., Juelich, D-52425, Germany
SOURCE: Ber. Forschungszent. Juelich (1997), Juel-3349, 1-115
pp.
CODEN: FJBEE5; ISSN: 0366-0885
DOCUMENT TYPE: Report
LANGUAGE: German
TI L-Lysine export from Corynebacterium glutamicum. Physiological
and molecular-biological characterization of the carrier-mediated export
of a primary metabolite
AB The gene for the Lys-excretion carrier was isolated from C. glutamicum
and
the Lys export was analyzed physiol. A system was established which
induces the Lys excretion in dependence of Met. The mutant NA8, defect
in
Lys export, was isolated. The L-Lys export (LysE) gene encodes a
polypeptide of 236 amino acids with the potential to span the membrane 6
times and a mol. wt. of 2,5425 Da. With overexpressed LysE, L-Lys was
exported at a rate of 3.76 nmol/min/mg dry wt. which lead to a 10-fold
increased Lys excretion rate. The LysG (governing L-Lys export)
gene is localized immediately adjacent to LysE, but is
transcribed divergently. The deduced polypeptide (290 amino acids) has
a
helix-turn-helix motive at the aminotermius. At the sequence level,
LysG shows .ltoreq.35% identity to prokaryotic, autoregulatory transcriptional
```

regulators. LysG acts in trans and leads to a decrease of the Lys excretion by *C. glutamicum*. For the Lys-export defect mutant *C. glutamicum* NA8, the transition G1594.fwdarw.A1594 was shown which results in a stop-codon in the LysE gene. The resulting LysE polypeptide in *C. glutamicum* NA8 is shortened for 43 amino acids. The growth of a LysEG deletion mutant was abolished on a minimal medium in the presence of Lys-contg. dipeptides. The quantification of the intracellular L-Lys concns. revealed an accumulation of Lys .ltoreq.1,100 mM. The results suggest that the physiol. function of the Lys export carrier of *C. glutamicum* is to avoid extremely high intracellular Lys concns.

ST lysine excretion carrier **Corynebacterium** gene sequence; protein sequence **Corynebacterium** lysine excretion carrier

IT Amino acid transport (biological)
(carrier-mediated, export; lysine export from **Corynebacterium** glutamicum, carrier-supported export of a primary metabolite)

IT Helix-turn-helix
(gene lysG protein; lysine export from **Corynebacterium** glutamicum, carrier-supported export of a primary metabolite)

IT Proteins (specific proteins and subclasses)
RL: BAC (Biological activity or effector, except adverse); BOC (Biological occurrence); PRP (Properties); BIOL (Biological study); OCCU (Occurrence)
(gene lysG, (governing lysine export); lysine export from **Corynebacterium** glutamicum, carrier-supported export of a primary metabolite)

IT Genes (**microbial**)
RL: BOC (Biological occurrence); PRP (Properties); BIOL (Biological study); OCCU (Occurrence)
(lysE; lysine export from **Corynebacterium** glutamicum, carrier-supported export of a primary metabolite)

IT Genes (**microbial**)
RL: BOC (Biological occurrence); PRP (Properties); BIOL (Biological study); OCCU (Occurrence)
(lysG (governing lysine export); lysine export from **Corynebacterium** glutamicum, carrier-supported export of a primary metabolite)

IT **Corynebacterium** glutamicum
DNA sequences
Protein sequences
(lysine export from **Corynebacterium** glutamicum, carrier-supported export of a primary metabolite)

IT Amino acid transporters
RL: BAC (Biological activity or effector, except adverse); BOC (Biological occurrence); PRP (Properties); BIOL (Biological study); OCCU (Occurrence)
(lysine-transporting, gene lysE; lysine export from **Corynebacterium** glutamicum, carrier-supported export of a primary metabolite)

IT 63-68-3, L-Methionine, biological studies
RL: BAC (Biological activity or effector, except adverse); BIOL (Biological study)
(induces lysine excretion; lysine export from **Corynebacterium** glutamicum, carrier-supported export of a primary metabolite)

IT 184922-77-8, GenBank X96471-derived protein GI 1729755
RL: BAC (Biological activity or effector, except adverse); BOC (Biological occurrence); PRP (Properties); BIOL (Biological study); OCCU (Occurrence)
(lysine export from **Corynebacterium** glutamicum,

carrier-supported export of a primary metabolite)
 IT 184922-76-7, GenBank X96471-derived protein GI 1729754 184922-78-9,
 GenBank X96471-derived protein GI 1729756
 RL: BOC (Biological occurrence); PRP (Properties); BIOL (Biological
 study); OCCU (Occurrence)
 (lysine export from **Corynebacterium** glutamicum,
 carrier-supported export of a primary metabolite)
 IT 56-87-1, L-Lysine, biological studies
 RL: BPR (Biological process); BIOL (Biological study); PROC (Process)
 (lysine export from **Corynebacterium** glutamicum,
 carrier-supported export of a primary metabolite)
 IT 184343-19-9, GenBank X96471
 RL: BOC (Biological occurrence); PRP (Properties); BIOL (Biological
 study); OCCU (Occurrence)
 (nucleotide sequence; lysine export from **Corynebacterium**
 glutamicum, carrier-supported export of a primary metabolite)

=> dis L14 1-26 ibib kwic

L14 ANSWER 1 OF 26 BIOSIS COPYRIGHT 2001 BIOSIS
 ACCESSION NUMBER: 2001:314459 BIOSIS
 DOCUMENT NUMBER: PREV200100314459
 TITLE: Effect of gluconic acid as a secondary carbon source on
 non-growing L-lysine producers cells of
Corynebacterium glutamicum. Purification and
 properties of 6-phosphogluconate dehydrogenase.
 AUTHOR(S): Bianchi, Daniella; Bertrand, Olivier; Haupt, Karsten;
 Coello, Nereida (1)
 CORPORATE SOURCE: (1) Instituto de Biologia Experimental, Universidad
 Central
 deVenezuela, Caracas, 1041-A: ncoello@uole.com.ve
 Venezuela
 SOURCE: Enzyme and Microbial Technology, (June 7, 2001) Vol. 28,
 No. 9-10, pp. 754-759. print.
 ISSN: 0141-0229.
 DOCUMENT TYPE: Article
 LANGUAGE: English
 SUMMARY LANGUAGE: English
 TI Effect of gluconic acid as a secondary carbon source on non-growing
 L-lysine producers cells of **Corynebacterium** glutamicum.
 Purification and properties of 6-phosphogluconate dehydrogenase.
 AB We studied the production of L-lysine in **Corynebacterium**
 glutamicum ATCC 21543 non growing cells obtained by nutrient limitation.
 Statistical analysis revealed significant differences in the L-lysine
 titers of. . .
 IT . . .
 Engineering; Methods and Techniques; Nutrition
 IT Chemicals & Biochemicals
 6-phosphogluconate dehydrogenase: amino acid sequence, analysis,
 molecular properties, pH, purification; L-lysine: **microbial**
production, yield; **amino acids**: analysis;
 carbon sources; gluconic acid: secondary carbon source
 ORGN . . .
 Microorganisms; Irregular Nonsporing Gram-Positive Rods: Actinomycetes
 and Related Organisms, Eubacteria, Bacteria, Microorganisms;
 Microorganisms
 ORGN Organism Name

Bacillus subtilis (Endospore-forming Gram-Positives);
Corynebacterium glutamicum (Irregular Nonsporing Gram-Positive
Rods); non-growing cells; Escherichia coli (Enterobacteriaceae);
bacteria (Bacteria); microorganisms (Microorganisms)
ORGN Organism Superterms
Bacteria; Eubacteria; Microorganisms

L14 ANSWER 2 OF 26 BIOSIS COPYRIGHT 2001 BIOSIS

ACCESSION NUMBER: 2001:421002 BIOSIS

DOCUMENT NUMBER: PREV200100421002

TITLE: L-glutamate fermentation and metabolic engineering:
Studies

on the L-glutamate production mechanism in Coryneform
bacteria.

AUTHOR(S): Nakamatsu, Tsuyoshi

SOURCE: Nippon Nogekagaku Kaishi, (Jun., 2001) Vol. 75, No. 6,
pp.

683-686. print.

ISSN: 0002-1407.

DOCUMENT TYPE: General Review

LANGUAGE: Japanese

SUMMARY LANGUAGE: English

IT Major Concepts

Biochemistry and Molecular Biophysics; Bioprocess Engineering;
Metabolism

IT Chemicals & Biochemicals

amino acids: large-scale microbial

production; glutamate: large-scale microbial

production; oxoglutarate dehydrogenase

ORGN Super Taxa

Irregular Nonsporing Gram-Positive Rods: Actinomycetes and Related
Organisms, Eubacteria, Bacteria, Microorganisms

ORGN Organism Name

Corynebacterium spp. (Irregular Nonsporing Gram-Positive
Rods)

ORGN Organism Superterms

Bacteria; Eubacteria; Microorganisms

L14 ANSWER 3 OF 26 BIOSIS COPYRIGHT 2001 BIOSIS

ACCESSION NUMBER: 2001:174925 BIOSIS

DOCUMENT NUMBER: PREV200100174925

TITLE: MALDI-TOF MS for quantification of substrates and products
in cultivations of **Corynebacterium glutamicum**.

AUTHOR(S): Wittmann, Christoph (1); Heinzle, Elmar

CORPORATE SOURCE: (1) Biochemical Engineering Institute, Saarland
University,

66041, Saarbruecken: c.wittmann@rz.uni-sb.de Germany
Biotechnology and Bioengineering, (March 20, 2001) Vol.

SOURCE: 72,
No. 6, pp. 642-647. print.

ISSN: 0006-3592.

DOCUMENT TYPE: Article

LANGUAGE: English

SUMMARY LANGUAGE: English

TI MALDI-TOF MS for quantification of substrates and products in
cultivations

of **Corynebacterium glutamicum**.

IT Major Concepts

Biochemistry and Molecular Biophysics; Bioprocess Engineering; Methods and Techniques

IT Chemicals & Biochemicals

amino acids: microbial production

, quantitative analysis; products: quantitative analysis; substrates: quantitative analysis

L14 ANSWER 4 OF 26 CAPLUS COPYRIGHT 2001 ACS

ACCESSION NUMBER: 2000:761605 CAPLUS

DOCUMENT NUMBER: 134:99608

TITLE: Development and use of miniaturized parallel experiment technology for bioprocess development

AUTHOR(S): Altenbach-Rehm, Jutta

CORPORATE SOURCE: Institut für Biotechnologie, Jülich, JUL-3782,

Germany

SOURCE: Ber. Forschungszent. Jülich (2000), Jülich-3782, a-f, i-iv, 1-233

CODEN: FJBEE5; ISSN: 0366-0885

DOCUMENT TYPE: Report

LANGUAGE: German

AB The fed-batch technique is nowadays the std. operation mode for high performance **microbial prodn.** processes. Shake flasks are widely used a simple bioreactors in batch process development. Because of uncontrolled changes in pH and reduced oxygen transfer rates parallel operated shake flasks can usually not be applied for microbial fed-batch process development. Due to the need to operate controlled stirred tank reactors the development of specific fermn. strategies is expensive and time consuming. To address these issues a miniature fed-batch technique was developed in cooperation with DASGIP mbH, Jülich, and INFORS AG, Basel. Controlled batch and fed-batch fermns. can be performed in 16 parallel small scale bioreactors. The new technique allows the feeding of up to 4 different substrates and parallel pH

control

based on user-defined profiles. The feeding assembly is sterilized chem. using dimethylcarbonate. To overcome the limitations of shake flasks, small scale bubble columns were developed. Gas distribution is performed with a new type of sterile sparger. Transferring fed-batch fermns. from small scale bubble columns to a stirred tank reactor a scale up factor of 20 was achieved. Escherichia coli K12 was chosen to test the new

parallel

bioreactor technique. Compared to shake flask fermns. the cell concn.

was

50% higher due to efficient oxygen transfer. In fed-batch fermns. with pH-controlled substrate feeding up to 35 g/l DCW were achieved. For the 1st time, a parallel optimization of feeding profiles in parallel small scale fed-batch expts. with successful scale-up to a lab. bioreactor was performed. Escherichia coli BL 21 (DE3) pLysS produces the recombinant enzyme GDP- α -D-mannose-pyrophosphorylase after induction with isopropyl-.beta.-D-thiogalactoside (IPTG). Single induction with 0,5 mM IPTG resulted in a low specific enzyme activity of 1,6 U/g DCW (dry cell wt.). For the optimization of enzyme expression a genetic algorithm was used. A final enzyme activity of 111 U/g DCW was achieved for optimal substrate and inducer feeding profiles. To demonstrate the advantages of this new parallel bioreactor technique different strains of industrial relevance were investigated. **Corynebacterium glutamicum**, **Staphylococcus carnosus** and **Ashbya gossypii**.

ST bioreactor bubble column fed batch fermn; GDP mannose pyrophosphorylase bubble column fed batch; Staphylococcus bubble column fed batch fermn;

isoleucine bubble column fed batch **Corynebacterium**; riboflavin
bubble column fed batch Ashbya

IT **Amino acids**, biological studies
RL: BPR (Biological process); BIOL (Biological study); PROC (Process)
(amino acid consumption in riboflavin prodn. by Ashbya gossypii in
parallel bubble columns with fed-batch technique)

IT **Corynebacterium glutamicum**
(L-isoleucine prodn. by **Corynebacterium glutamicum** in
parallel bubble columns with fed-batch technique)

IT 73-32-5P, L-Isoleucine, biological studies
RL: BMF (Bioindustrial manufacture); BPR (Biological process); BIOL
(Biological study); PREP (Preparation); PROC (Process)
(L-isoleucine prodn. by **Corynebacterium glutamicum** in
parallel bubble columns with fed-batch technique, amino acid
consumption in riboflavin prodn. by Ashbya gossypii)

IT 61-90-5, L-Leucine, biological studies
RL: BPR (Biological process); MFM (Metabolic formation); BIOL (Biological
study); FORM (Formation, nonpreparative); PROC (Process)
(L-isoleucine prodn. by **Corynebacterium glutamicum** in
parallel bubble columns with fed-batch technique, amino acid
consumption in riboflavin prodn. by Ashbya gossypii)

L14 ANSWER 5 OF 26 CAPLUS COPYRIGHT 2001 ACS

ACCESSION NUMBER: 1999:244776 CAPLUS

DOCUMENT NUMBER: 130:266420

TITLE: Method for **microbial production of
amino acids** of the aspartate and/or
glutamate family and agents which can be used in said
method

INVENTOR(S): Eikmanns, Bernd; Peters-Wendisch, Petra; Sahm,
Hermann

PATENT ASSIGNEE(S): Forschungszentrum Julich G.m.b.H., Germany

SOURCE: PCT Int. Appl., 40 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9918228	A2	19990415	WO 1998-EP6210	19980930
WO 9918228	A3	19990520		
W: AU, BR, CA, CN, HU, ID, JP, KR, MX, RU, SK, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
DE 19831609	A1	19990415	DE 1998-19831609	19980714
AU 9911482	A1	19990427	AU 1999-11482	19980930
EP 1015621	A2	20000705	EP 1998-954301	19980930
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
BR 9813021	A	20000815	BR 1998-13021	19980930
PRIORITY APPLM. INFO.:			DE 1997-19743894 A	19971004
			DE 1998-19831609 A	19980714
			WO 1998-EP6210 W	19980930

TI Method for **microbial production of amino
acids** of the aspartate and/or glutamate family and agents which
can be used in said method

AB The invention relates to a method for **microbial prodn.** of **amino acids** of the aspartate and/or glutamate family in which the pyruvate carboxylase activity is increased by genetically changing the enzyme and/or the pyruvate carboxylase gene expression of a microorganism which produces the corresponding amino acid.

In addn., the invention relates to a pyruvate carboxylase gene and addnl. agents which can be used in the inventive method.

ST amino acid fermm **Corynebacterium** pyruvate carboxylase genetic engineering

IT **Corynebacterium glutamicum**
Fermentation
(**microbial prodn. of amino acids** of the aspartate and/or glutamate family and agents which can be used in said method)

IT **Amino acids**, preparation
RL: BMF (Bioindustrial manufacture); BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(**microbial prodn. of amino acids** of the aspartate and/or glutamate family and agents which can be used in said method)

IT Genetic engineering
(**microbial prodn. of amino acids** of the aspartate and/or glutamate family and modification of **Corynebacterium pyc** gene in said method)

IT Genes (microbial)
RL: BPR (Biological process); BIOL (Biological study); PROC (Process)
(**pyc; microbial prodn. of amino acids** of the aspartate and/or glutamate family and modification of **Corynebacterium pyc** gene in said method)

IT 56-86-0P, L-Glutamic acid, preparation 56-87-1P, L-Lysine, preparation 72-19-5P, L-Threonine, preparation 74-79-3P, L-Arginine, preparation 672-15-1P, L-Homoserine
RL: BMF (Bioindustrial manufacture); BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(**microbial prodn. of amino acids** of the aspartate and/or glutamate family and agents which can be used in said method)

IT 9014-19-1, Pyruvate carboxylase 204116-18-7 208541-81-5
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(**microbial prodn. of amino acids** of the aspartate and/or glutamate family and agents which can be used in said method)

L14 ANSWER 6 OF 26 BIOSIS COPYRIGHT 2001 BIOSIS

ACCESSION NUMBER: 1999:175414 BIOSIS

DOCUMENT NUMBER: PREV199900175414

TITLE: Cloning of the transketolase gene and the effect of its dosage on aromatic amino acid production in **Corynebacterium glutamicum**.

AUTHOR(S): Ikeda, M. (1); Okamoto, K.; Katsumata, R.

CORPORATE SOURCE: (1) Technical Research Laboratories, Kyowa Hakko Kogyo Co.,

SOURCE: Ltd., Hofu, Yamaguchi, 747-8522 Japan
Applied Microbiology and Biotechnology, (Feb., 1999) Vol. 51, No. 2, pp. 201-206.
ISSN: 0175-7598.

DOCUMENT TYPE: Article

LANGUAGE: English

TI Cloning of the transketolase gene and the effect of its dosage on aromatic

amino acid production in **Corynebacterium glutamicum**.

AB. . . enzyme of the non-oxidative pentose phosphate pathway. The effect of

its overexpression on aromatic amino acid production was investigated in **Corynebacterium glutamicum**, a typical amino-acid-producing organism. For this purpose, the transketolase gene of the organism was cloned on the basis of. . . the presence of the gene in high copy numbers enabled tyrosine, phenylalanine and tryptophan producers to accumulate 5%-20% more aromatic **amino acids**. These results indicate that overexpressed transketolase activity operates to redirect the glycolytic intermediates toward the nonoxidative pentose phosphate pathway in. . .

IT Major Concepts

Bioprocess Engineering; Enzymology (Biochemistry and Molecular Biophysics); Molecular Genetics (Biochemistry and Molecular

Biophysics)

IT Chemicals & Biochemicals

aromatic **amino acids**: **microbial**

production; transketolase [EC 2.2.1.1]; **Corynebacterium** transketolase gene (Irregular Nonsporing Gram-Positive Rods)

L14 ANSWER 7 OF 26 CAPLUS COPYRIGHT 2001 ACS

ACCESSION NUMBER: 1998:277651 CAPLUS

DOCUMENT NUMBER: 128:307587

TITLE: **Microbial production** of substances from aromatic metabolism

INVENTOR(S): Sprenger, Georg; Siewe, Ruth; Sahm, Hermann; Karutz, Martin; Sonke, Theodor

PATENT ASSIGNEE(S): Forschungszentrum Juelich G.m.b.H., Germany; Holland Sweetener Co. V.o.F.

SOURCE: Ger. Offen., 14 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
DE 19644566	A1	19980430	DE 1996-19644566	19961026
WO 9818936	A1	19980507	WO 1997-NL582	19971017
W:	AL, AU, BA, BB, BG, BR, CA, CN, CU, CZ, EE, GE, HU, ID, IL, IS, JP, KP, KR, LC, LK, LR, LT, LV, MG, MK, MN, MX, NO, NZ, PL, RO, SG, SI, SK, SL, TR, TT, UA, US, UZ, VN, YU, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
RW:	GH, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG			
AU 9747277	A1	19980522	AU 1997-47277	19971017
EP 934418	A1	19990811	EP 1997-909748	19971017
R:	AT, BE, CH, DE, DK, ES, FR, GB, IT, LI, NL, SE, PT, FI			
CN 1241214	A	20000112	CN 1997-180908	19971017
JP 2001506486	T2	20010522	JP 1998-520318	19971017
PRIORITY APPLN. INFO.:			DE 1996-19644566 A	19961026
			WO 1997-NL582 W	19971017

TI **Microbial production** of substances from aromatic metabolism

IT Transport proteins
 RL: BOC (Biological occurrence); BPN (Biosynthetic preparation); BUU (Biological use, unclassified); BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); USES (Uses)
 (gene glf glucose facilitator protein, of *Zymomonas mobilis*;
microbial prodn. of substances from arom. metab.)

IT Genes (microbial)
 RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
 (glf, for glucose facilitator protein of *Zymomonas mobilis*;
microbial prodn. of substances from arom. metab.)

IT Genes (microbial)
 RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
 (glk, for glucokinase of *Zymomonas mobilis*; **microbial prodn.** of substances from arom. metab.)

IT Pentose phosphate pathway
 (intermediates of, in amino acid manuf.; **microbial prodn.** of substances from arom. metab.)

IT *Bacillus* (bacterium genus)
Brevibacterium
Corynebacterium
Escherichia
Escherichia coli
 Fermentation
 Microorganism
 Molecular cloning
Serratia
 (**microbial prodn.** of substances from arom. metab.)

IT Transport proteins
 RL: BOC (Biological occurrence); BPN (Biosynthetic preparation); BUU (Biological use, unclassified); BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); USES (Uses)
 (**microbial prodn.** of substances from arom. metab.)

IT **Amino acids**, preparation
 RL: BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
 (**microbial prodn.** of substances from arom. metab.)

IT Plasmids
 (pZ4557tal; **microbial prodn.** of substances from arom. metab.)

IT Plasmids
 (pZ4557tkkt; **microbial prodn.** of substances from arom. metab.)

IT Plasmids
 (pZ4557tkttal; **microbial prodn.** of substances from arom. metab.)

IT Genes (microbial)
 RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
 (talB; **microbial prodn.** of substances from arom. metab.)

IT Genes (microbial)
 RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
 (tkkA; **microbial prodn.** of substances from arom. metab.)

metab.)

IT 9001-36-9P, Glucokinase
 RL: BOC (Biological occurrence); BPN (Biosynthetic preparation); BUU (Biological use, unclassified); BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); USES (Uses)
 (gene glk, of *Zymomonas mobilis*; **microbial prodn.** of substances from arom. metab.)

IT 585-18-2, Erythrose-4-phosphate
 RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
 (in amino acid manuf.; **microbial prodn.** of substances from arom. metab.)

IT 9014-46-4P, Transaldolase 9014-48-6P, Transketolase
 RL: BOC (Biological occurrence); BPN (Biosynthetic preparation); BUU (Biological use, unclassified); BIOL (Biological study); OCCU (Occurrence); PREP (Preparation); USES (Uses)
 (**microbial prodn.** of substances from arom. metab.)

IT 63-91-2P, L-Phenylalanine, preparation
 RL: BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
 (**microbial prodn.** of substances from arom. metab.)

L14 ANSWER 8 OF 26 CAPLUS COPYRIGHT 2001 ACS

ACCESSION NUMBER: 1995:674124 CAPLUS
 DOCUMENT NUMBER: 123:54314
 TITLE: Enhancement of reduced NADP production for enhanced **microbial production** of biochemicals
 Kojima, Hiroyuki; Totsuka, Kazuhiko
 INVENTOR(S):
 PATENT ASSIGNEE(S): Ajinomoto Co., Inc., Japan
 SOURCE: PCT Int. Appl., 32 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9511985	A1	19950504	WO 1994-JP1791	19941026
W: AU, BR, CA, CN, CZ, HU, JP, KR, PL, RU, SK, US, VN				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
CA 2175042	AA	19950504	CA 1994-2175042	19941026
AU 9480026	A1	19950522	AU 1994-80026	19941026
AU 687458	B2	19980226		
EP 733712	A1	19960925	EP 1994-931158	19941026
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT,				
SE				
BR 9407907	A	19961126	BR 1994-7907	19941026
HU 74840	A2	19970228	HU 1996-1085	19941026
ZA 9503350	A	19961025	ZA 1995-3350	19950425
US 5830716	A	19981103	US 1996-619521	19960429
CN 1139956	A	19970108	CN 1994-194707	19961026
PRIORITY APPLN. INFO.:			JP 1993-270828	19931028
			WO 1994-JP1791	19941026
TI				
Enhancement of reduced NADP production for enhanced microbial production of biochemicals				
AB				
The productivity of such substances as L-amino acids, antibiotics, vitamins, growth factors and physiol. active substances in				

- the fermn. using a microorganism is improved by improving the productivity of reduced NADP in the cells of the microorganisms. Construction of pMW::THY contg. the Escherichia coli transhydrogenase gene, and introduction of the plasmid into the L-threonine-producing Escherichia coli B-3996 were shown. The recombinant E. coli B-3996 produced L-threonine .apprx.10% higher than did the parental strain.
- IT **Corynebacterium glutamicum**
Escherichia coli
Fermentation
(enhancement of reduced NADP prodn. for enhanced **microbial prodn.** of biochems.)
- IT **Amino acids**, preparation
RL: BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(enhancement of reduced NADP prodn. for enhanced **microbial prodn.** of biochems.)
- IT Plasmid and Episome
(pHSG::THY; enhancement of reduced NADP prodn. for enhanced **microbial prodn.** of biochems.)
- IT Plasmid and Episome
(pMW::THY; enhancement of reduced NADP prodn. for enhanced **microbial prodn.** of biochems.)
- IT Plasmid and Episome
(pSU::THY; enhancement of reduced NADP prodn. for enhanced **microbial prodn.** of biochems.)
- IT 9014-18-0, Nicotinamide nucleotide transhydrogenase
RL: BAC (Biological activity or effector, except adverse); BIOL (Biological study)
(enhancement of reduced NADP prodn. for enhanced **microbial prodn.** of biochems.)
- IT 56-86-0P, L-Glutamic acid, preparation 56-87-1P, L-Lysine, preparation 61-90-5P, L-Leucine, preparation 63-91-2P, L-Phenylalanine, preparation 72-18-4P, L-Valine, preparation 72-19-5P, L-Threonine, preparation 73-32-5P, L-Isoleucine, preparation
RL: BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(enhancement of reduced NADP prodn. for enhanced **microbial prodn.** of biochems.)
- IT 53-59-8P, NADP
RL: BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(reduced; enhancement of reduced NADP prodn. for enhanced **microbial prodn.** of biochems.)

L14 ANSWER 9 OF 26 SCISEARCH COPYRIGHT 2001 ISI (R)
ACCESSION NUMBER: 95:184306 SCISEARCH
THE GENUINE ARTICLE: QK574
TITLE: METABOLIC DESIGN IN AMINO-ACID PRODUCING BACTERIUM
CORYNEBACTERIUM GLUTAMICUM
SAHM H (Reprint); EGDELING L; EIKMANN B; KRAMER R
CORPORATE SOURCE: KFA JULICH GMBH, FORSCHUNGSZENTRUM, INST BIOTECHNOL,
D-52425 JULICH, GERMANY (Reprint)
COUNTRY OF AUTHOR: GERMANY
SOURCE: FEMS MICROBIOLOGY REVIEWS, (FEB 1995) Vol. 16, No. 2-3,
pp. 243-252.
ISSN: 0168-6445.
DOCUMENT TYPE: Article; Journal

FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 36

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

TI METABOLIC DESIGN IN AMINO-ACID PRODUCING BACTERIUM **CORYNEBACTERIUM**
-GLUTAMICUM
AB The Gram-positive bacterium **Corynebacterium glutamicum** is
used for the industrial production of **amino acids**,
e.g. of L-glutamate and L-lysine. In the last 10 years, genetic
engineering and amplification of relevant structural genes have become.
ST Author Keywords: **CORYNEBACTERIUM GLUTAMICUM**; AMINO ACID
PRODUCTION; METABOLIC DESIGN; L-LYSINE; L-THREONINE; L-ISOLEUCINE
STP KeyWords Plus (R): L-THREONINE; L-LYSINE; BREVIBACTERIUM-LACTOFERMENTUM;
HOMOSERINE DEHYDROGENASE; **MICROBIAL PRODUCTION**;
RESISTANT MUTANTS; SPLIT PATHWAY; BIOSYNTHESIS; ISOLEUCINE; GENES

L14 ANSWER 10 OF 26 SCISEARCH COPYRIGHT 2001 ISI (R)
ACCESSION NUMBER: 96:7187 SCISEARCH
THE GENUINE ARTICLE: TJ545
TITLE: METABOLIC DESIGN IN THE AMINO-ACID-PRODUCING BACTERIUM
CORYNEBACTERIUM-GLUTAMICUM
AUTHOR: SAHM H (Reprint)
CORPORATE SOURCE: KFA JULICH GMBH, FORSCHUNGSZENTRUM, INST BIOTECHNOL,
D-52425 JULICH, GERMANY (Reprint)
COUNTRY OF AUTHOR: GERMANY
SOURCE: FOLIA MICROBIOLOGICA, (1995) Vol. 40, No. 1, pp. 23-30.
ISSN: 0015-5632.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE; AGRI
LANGUAGE: ENGLISH
REFERENCE COUNT: 26

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

TI METABOLIC DESIGN IN THE AMINO-ACID-PRODUCING BACTERIUM
CORYNEBACTERIUM-GLUTAMICUM
AB The Gram-positive bacterium **Corynebacterium glutamicum** is
used for the industrial production of **amino acids**,
e.g. of L-glutamate and L-lysine. By cloning and expressing the various
genes of the L-lysine pathway in *C. glutamicum* we. . .
STP KeyWords Plus (R): L-THREONINE; BREVIBACTERIUM-LACTOFERMENTUM; HOMOSERINE
DEHYDROGENASE; **MICROBIAL PRODUCTION**; LYSINE
BIOSYNTHESIS; RESISTANT MUTANTS; SPLIT PATHWAY; GENES; AMPLIFICATION;
FERMENTATION

L14 ANSWER 11 OF 26 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1985:436156 CAPLUS
DOCUMENT NUMBER: 103:36156
TITLE: Optimization of amino acid production by automatic
self-tuning digital control of redox potential
AUTHOR(S): Radjai, Mohammad K.; Hatch, Randolph T.; Cadman,
Theodore W.
CORPORATE SOURCE: Dep. Chem. Nucl. Eng., Univ. Maryland, College Park,
MD, 20742, USA
SOURCE: Biotechnol. Bioeng. Symp. (1984), 14(Symp.
Biotechnol.

Fuels Chem., 6th), 657-79
CODEN: BIBSBR; ISSN: 0572-6565

DOCUMENT TYPE: Journal
 LANGUAGE: English

AB The **microbial prodn.** of homoserine [672-15-1], lysine [56-87-1], and valine [72-18-4] by an auxotrophic mutant of **Corynebacterium glutamicum** was investigated in a 16-L batch fermentor. Closed-loop digital control of redox potential was implemented using proportional-integral (PI) control of agitation rates. Due to the nonlinearity of the system, the PI controller parameters had to be changed during the course of the ferments. An automatic, self-tuning algorithm was developed for stable control of redox potential. This permitted exptl. optimization of total and selective amino acid prodn. Total amino acid yields of 35% from glucose were achieved compared to 23% reported in the literature for the same ferment.

IT **Corynebacterium glutamicum**
 (amino acid manuf. with, optimization and redox potential control in)

IT **Amino acids**, preparation
 RL: BMF (Bioindustrial manufacture); BIOL (Biological study); PREP (Preparation)
 (manuf. of, by ferment.)

L14 ANSWER 12 OF 26 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 1
 ACCESSION NUMBER: 1979:20814 CAPLUS
 DOCUMENT NUMBER: 90:20814
 TITLE: **Microbial production of essential amino acids with Corynebacterium glutamicum mutants**

AUTHOR(S): Nakayama, Kiyoshi; Araki, Kazumi; Kase, Hiroshi
 CORPORATE SOURCE: Tokyo Res. Lab., Kyowa Hakko Kogyo Co., Ltd., Japan
 SOURCE: Adv. Exp. Med. Biol. (1978), 105(Nutr. Improv. Food Feed Proteins), 649-61
 CODEN: AEMBAP; ISSN: 0065-2598

DOCUMENT TYPE: Journal
 LANGUAGE: English

TI **Microbial production of essential amino acids with Corynebacterium glutamicum mutants**

AB **Amino acids** produced by microbial processes are generally L-forms. The stereospecificity of the **amino acids** produced by ferment. makes the process advantageous compared with synthetic processes. Microorganisms employed in microbial processes for amino acid prodn. are divided into 4 classes: wild-type, auxotrophic mutant, regulatory mutant, and auxotrophic regulatory mutant. Using such mutants of **Corynebacterium glutamicum**, all the essential **amino acids** but L-methionine are now being produced by direct ferment. from cheap C sources such as carbohydrate materials or acetic acid.

ST amino acid manuf **Corynebacterium**
 IT **Corynebacterium glutamicum**
 (amino acid manuf. by)

IT Fermentation
 (amino acids, by **Corynebacterium glutamicum**)

IT **Amino acids**, preparation
 RL: BMF (Bioindustrial manufacture); BIOL (Biological study); PREP (Preparation)

(manuf. of, from carbohydrates by **Corynebacterium glutamicum**)

L14 ANSWER 13 OF 26 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1976:521806 CAPLUS
DOCUMENT NUMBER: 85:121806
TITLE: **Microbial production** of amino acid
INVENTOR(S): Tsuchida, Takayasu; Yoshihara, Yasuhiko; Kubota, Koji;
Koji;
Hirose, Yoshio
PATENT ASSIGNEE(S): Ajinomoto Co., Inc., Japan
SOURCE: Japan. Kokai, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	----	-----	-----
	JP 51061690	A2	19760528	JP 1974-134879	19741122
TI	Microbial production of amino acid				
ST	amino acid manuf Brevibacterium; Corynebacterium amino acid manuf				
IT	Brevibacterium Corynebacterium (amino acid manuf. by)				
IT	Fermentation (amino acids, by Corynebacterium or Brevibacterium)				
IT	56-45-1P, preparation 73-22-3P, preparation RL: PREP (Preparation) (by fermn., with Corynebacterium)				

L14 ANSWER 14 OF 26 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1975:529947 CAPLUS
DOCUMENT NUMBER: 83:129947
TITLE: **Microbial production** of amino acids. VI. Formation of L-amino acids from DL-.alpha.-hydroxycarboxylic acids
AUTHOR(S): Matsushima, Hirochika; Murata, Keijiro; Mase, Yasuo
CORPORATE SOURCE: Ferment. Res. Lab., Sankyo Co., Ltd., Tanashi, Japan
SOURCE: Hakko Kagaku Zasshi (1975), 53(7), 443-9
CODEN: HKZAA2
DOCUMENT TYPE: Journal
LANGUAGE: Japanese
TI **Microbial production** of amino acids
. VI. Formation of L-amino acids from DL-.alpha.-hydroxycarboxylic acids
AB Formation of L-amino acids from DL-.alpha.-hydroxycarboxylic acids was studied. L-.alpha.-aminobutyric acid [1492-24-6] was formed in a medium contg. DL-.alpha.-hydroxybutyric acid [600-15-7] by various bacteria belonging to Aerobacter, Bacillus, **Corynebacterium**, Escherichia, Flavobacterium, Micrococcus, Proteus, Pseudomonas, Sarcina, Staphylococcus, and other genera. A. cloacae IAM 1221 was cultured in a medium contg. DL-.alpha.-bromobutyric acid [2385-70-8] (hydrolyzed to hydroxybutyric acid). L-.alpha.-aminobutyric acid was isolated from the culture broth and

identified by thin-layer chromatog., elementary anal., and by its specific rotation and IR spectrum. Formation of valine [72-18-4], leucine [61-90-5], or phenylalanine [63-91-2] from DL- α -hydroxycarboxylic acids by *Brevibacterium roseum* ATCC 13825 was studied. Yields (mole) from the cultures were 84.22, 95.7, and 47.7%, resp. An amino-group donor (glutamic acid) was needed besides the bacterial cells and DL- α -hydroxycarboxylic acid for the enzymic formation of amino acids.

L14 ANSWER 15 OF 26 CAPLUS COPYRIGHT 2001 ACS

ACCESSION NUMBER: 1975:137747 CAPLUS

DOCUMENT NUMBER: 82:137747

TITLE: **Microbial production of amino acids**

INVENTOR(S): Kubota, Koji; Yoshihara, Yasuhiko; Okada, Hiroshi

PATENT ASSIGNEE(S): Ajinomoto Co., Inc.

SOURCE: Japan. Kokai, 5 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 49109585	A2	19741018	JP 1973-24049	19730228
JP 51038796	B4	19761023		

TI **Microbial production of amino acids**

AB **Amino acids** were produced by a microbe cultured in a propionic acid medium. Thus, *Brevibacterium flavum* ATCC 14,067, *Micrococcus glutamicus* ATCC 13,032, *Corynebacterium acetoacidophilum* ATCC 13,870, *Microbacterium ammoniaphilum* ATCC 15,354, and *B. flavum* FERM-P 1684 were cultured with shaking at 31.degree. for 48 hr in a medium (pH 7.5) contg. propionic acid 2, (NH₄)₂SO₄ 1, KH₂PO₄ 0.1, MgSO₄.cntdot.7H₂O 0.04, NaCl 0.1, and soybean protein hydrolysate (total

N = 7%) 0.2% plus biotin 2 and thiamine.cntdot.HCl 200 .mu.g/l. Prodn. of L-glutamic acid by each organism was 4.3, 4.2, 3.9, 4.0, and 2.5 mg/ml, resp. *B. flavum* FERM-P 1684 also produced N-acetylglutamine at 0.4 mg/ml.

IT *Corynebacterium acetoacidophilum*

(glutamic acid manuf. by, from propionic acid)

L14 ANSWER 16 OF 26 CAPLUS COPYRIGHT 2001 ACS

ACCESSION NUMBER: 1973:56392 CAPLUS

DOCUMENT NUMBER: 78:56392

TITLE: **Microbial production of amino acids** from aromatic compounds.

I. Screening of aromatic compound-assimilating bacteria

AUTHOR(S): Yamamoto, Masao; Nishida, Hiroshi; Inui, Taiji; Ozaki,

Asaichiro

CORPORATE SOURCE: Cent. Res. Lab., Sanraku-Ocean Co., Ltd., Fujisawa, Japan

SOURCE: Hakko Kogaku Zasshi (1972), 50(12), 868-75

DOCUMENT TYPE: CODEN: HKZAA2
Journal
LANGUAGE: English

TI **Microbial production of amino acids**
from aromatic compounds. I. Screening of aromatic compound-assimilating bacteria

AB In an attempt to produce **amino acids** from aromatic compds. by fermn., bacterial stock cultures in this lab. were examd. for their assimilability of benzoate and salicylate; 96 strains from 97 glutamate-producing cultures assimilated benzoic acid. Then, 10 type-strains of the glutamate-producing strains were tested for their assimilability of 40 aromatic compds. 16 of the compds. were assimilated. These were benzoic acid, m-hydroxybenzoic acid, p-hydroxybenzoic acid, 2,4-dihydroxybenzoic acid, 2,5-dihydroxybenzoic acid, 3,4-dihydroxybenzoic acid, 3,5-dihydroxybenzoic acid, phenylacetic acid, phenylpyruvic acid, .beta.-phenylpropionic acid, cinnamic acid, benzaldehyde, benzyl alc., phenol, catechol, and resorcinol. A sizable amt. of L-glutamic acid was produced from the assimilated compds. by these glutamate-producing bacteria, benzoate, esp., serving as the best substrate.

IT Brevibacterium
Brevibacterium lactofermentum
Corynebacterium acetoglutamicum
Microbacterium ammoniaphilum
Micrococcus glutamicus
(glutamic acid formation by, from arom. compds.)

L14 ANSWER 17 OF 26 CAPLUS COPYRIGHT 2001 ACS

ACCESSION NUMBER: 1971:84222 CAPLUS
DOCUMENT NUMBER: 74:84222
TITLE: Utilization of hydrocarbons by microorganisms. XXI. Biochemical studies of **microbial production** of .alpha.-ketoglutarate, L-glutamate, and DL-alanine from hydrocarbons
Imada, Yukio; Yamada, Koichi
AUTHOR(S):
CORPORATE SOURCE: Fac. Agric., Univ. Tokyo, Tokyo, Japan
SOURCE: Agr. Biol. Chem. (1971), 35(1), 18-26
CODEN: ABCHA6
DOCUMENT TYPE: Journal
LANGUAGE: English

TI Utilization of hydrocarbons by microorganisms. XXI. Biochemical studies of **microbial production** of .alpha.-ketoglutarate, L-glutamate, and DL-alanine from hydrocarbons

AB Strain S10B1 of **Corynebacterium hydrocarboclastus** produced .alpha.-ketoglutaric acid (I), L-glutamate, and DL-alanine from n-alkanes in a thiamine (II)-limited medium supplemented with Fe²⁺. The replacement of hydrocarbon substrate by sugars such as glucose not only decreased the yields, but also reversed the order of the yields among the 3 products. This phenomenon was explained by a metabolic pathway in relation to the role of II. Slow O₂ uptake in the presence of pyruvate and I by II-deficient cells supported the presumption that II limitation resulted in deficiency of a cofactor in the enzymic oxidn. of pyruvate and I. Activities of terminal enzymes in the synthesis of L-glutamate and DL-alanine were detd. and discussed. Three intermediates were detected in the culture broth.

ST **Corynebacterium** ketoglutarate prodn; ketoglutarate prodn

Corynebacterium; glutamate prodn **Corynebacterium**;
alanine prodn **Corynebacterium**; thiamine **Corynebacterium**
; hydrocarbons utilization bacteria; bacteria hydrocarbons utilization

- IT **Corynebacterium**
(hydrocarboclastus, amino acids formation by, from
hydrocarbons)
- IT 59-43-8, biological studies
RL: BIOL (Biological study)
(amino acids formation from paraffins by
Corynebacterium hydrocarboclastus in response to)

L14 ANSWER 18 OF 26 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1970:475660 CAPLUS
DOCUMENT NUMBER: 73:75660
TITLE: **Microbial production** of L-glutamic
acid
PATENT ASSIGNEE(S): Asahi Chemical Industry Co., Ltd.
SOURCE: Fr. Demande, 11 pp.
CODEN: FRXXBL
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----		-----	-----	-----
	FR 2009795		19700206		
PRIORITY APPLN. INFO.:			JP		19680531
TI	Microbial production of L-glutamic acid				
AB	L-Glutamic acid (I) is prepd. by aerobic cultivation of Corynebacterium or Brevibacterium in liq. media contg. Cl-3 alcs. as C source and penicillin. Thus, B. vitalumen var propanolophilum ATCC 21391 was grown in a medium contg. PrOH 50, corn steep liquor 4, KH2PO4				
2,	MgSO4.7H2O 0.5, Fe2+ 0.01, Mn2+ 0.01, urea 4 g/l., with the addn. of 100 .mu.g biotin and penicillin G (K salt) 10 units/l., at 32.degree. and pH 6.5-8.0 with shaking for 96 hr to give 23.1 g I/l. (46.2% based on PrOH). PrOH and penicillin were added in portions during the fermentation.				
ST	Without penicillin addn., the yield was 6.4% I. Brevibacterium glutamate prodn; glutamate prodn Brevibacterium; amino acids Corynebacterium ; Corynebacterium amino acids ; penicillin bacteria glutamate				
IT	Corynebacterium (melassecola and petrophylum, glutamic acid manuf. by)				

L14 ANSWER 19 OF 26 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1970:508239 CAPLUS
DOCUMENT NUMBER: 73:108239
TITLE: **Microbial production** of
L-threonine
INVENTOR(S): Nakayama, Kiyoshi; Kase, Hiroshi
PATENT ASSIGNEE(S): Kyowa Fermentation Industry Co. Ltd.
SOURCE: Ger. Offen., 22 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	DE 1817666	A	19700827	DE 1968-1817666	19681224

TI **Microbial production** of L-threonine

AB Various microorganisms, e.g. Aerobacter [Enterobacter] aerogenes, Serratia marcescens, or Arthrobacter paraffineus, cultured for producing L-threonine required 2 or 3 of the **amino acids** isoleucine, methionine, lysine, or diaminopimelic acid. The microorganisms were cultured aerobically in an aq. medium contg. the optimal (or less) amts. of the required **amino acids**. Thus, E. aerogenes NM-IS-5 (ATCC 21,215) was cultured 96 hr at 30.degree. in medium contg. glucose 5, (NH₄)₂SO₄ 1.4, KH₂PO₄ 0.05, K₂HPO₄ 0.05, MgSO₄·7H₂O 0.025, FeSO₄·7H₂O 0.001, MnSO₄·4H₂O 0.001, and CaCO₃ 2% and isoleucine 50, methionine 100, and diaminopimelic acid 200 mg/l. to give 7.8 g L-threonine/l.

ST **microbial prodn** threonine; threonine **microbial prodn**; Aerobacter threonine fermn; amino acid prodn fermn

IT **Corynebacterium** (glutamicum, threonine manuf. by)

L14 ANSWER 20 OF 26 CAPLUS COPYRIGHT 2001 ACS

ACCESSION NUMBER: 1970:401150 CAPLUS

DOCUMENT NUMBER: 73:1150

TITLE: **Microbial production** of L-threonine. II. Production by .alpha.-amino-.beta.-hydroxyvaleric acid resistant mutants of glutamate producing bacteria

AUTHOR(S): Shiio, Isamu; Nakamori, Shigeru

CORPORATE SOURCE: Cent. Res. Lab., Ajinomoto Co., Inc., Kawasaki, Japan

SOURCE: Agr. Biol. Chem. (1970), 34(3), 448-56

CODEN: ABCHA6

DOCUMENT TYPE: Journal

LANGUAGE: English

TI **Microbial production** of L-threonine. II. Production by .alpha.-amino-.beta.-hydroxyvaleric acid resistant mutants of glutamate producing bacteria

AB A mutant strain of Brevibacterium flavum was able to grow in a medium contg. 5 mg DL-threo-.alpha.-amino-.beta.-hydroxyvaleric acid (AHV)/ml; 1 mg AHV/ml inhibited the growth of the parental strain by >90%. Further treatment of the AHV-resistant strain with the mutagen, N-methyl-N'-nitro-N-nitrosoguanidine, produced a bacterial strain that was able to grown on 8 mg AHV/ml; this mutant produced 13.5 g L-threonine/l., an amt. 30% more than that produced by the parental strain. A similarly derived mutant of **Corynebacterium** acetoacidophilum resistant to AHV produced 6.1 g threonine/l. Other **amino acids** biosynthesized by the bacteria were discussed in relation to the regulation of threonine synthesis.

ST threonine prodn bacterial; **corynebacterium** threonine prodn; Brevibacterium threonine prodn; mutations bacteria threonine; bacteria mutations threonine; aminohydroxyvalerate bacteria

IT **Corynebacterium** (acetoacidophilum, tryptophan formation from aminohydroxyvaleric acid

by)

L14 ANSWER 21 OF 26 BIOSIS COPYRIGHT 2001 BIOSIS

ACCESSION NUMBER: 1970:123860 BIOSIS

DOCUMENT NUMBER: BA51:33860

TITLE: **MICROBIAL PRODUCTION OF AMINO-ACIDS** FROM HYDRO CARBONS PART 4 L GLUTAMIC-ACID PRODUCTION BY **CORYNEBACTERIUM-HYDROCARBOCLASTUS-R-7**.

AUTHOR(S): SHIIO I; UCHIO R

SOURCE: AMINO ACID NUCLEIC ACID, (1969) (19), 88-96.

CODEN: HATAA4. ISSN: 0517-6174.

FILE SEGMENT: BA; OLD

LANGUAGE: Unavailable

TI **MICROBIAL PRODUCTION OF AMINO-ACIDS**
FROM HYDRO CARBONS PART 4 L GLUTAMIC-ACID PRODUCTION BY
CORYNEBACTERIUM-HYDROCARBOCLASTUS-R-7.

L14 ANSWER 22 OF 26 BIOSIS COPYRIGHT 2001 BIOSIS DUPLICATE 2

ACCESSION NUMBER: 1970:106213 BIOSIS

DOCUMENT NUMBER: BA51:16213

TITLE: **MICROBIAL PRODUCTION OF AMINO-ACIDS** FROM HYDRO CARBONS PART 4 L GLUTAMIC-ACID PRODUCTION BY **CORYNEBACTERIUM-HYDROCARBOCLASTUS R-7**.

AUTHOR(S): SHIIO I; UCHIO R

SOURCE: J GEN APPL MICROBIOL, (1969) 15 (1), 65-84.

CODEN: JGAMA9. ISSN: 0022-1260.

FILE SEGMENT: BA; OLD

LANGUAGE: Unavailable

TI **MICROBIAL PRODUCTION OF AMINO-ACIDS**
FROM HYDRO CARBONS PART 4 L GLUTAMIC-ACID PRODUCTION BY
CORYNEBACTERIUM-HYDROCARBOCLASTUS R-7.

L14 ANSWER 23 OF 26 CAPLUS COPYRIGHT 2001 ACS

ACCESSION NUMBER: 1967:514494 CAPLUS

DOCUMENT NUMBER: 67:114494

TITLE: **Microbial production of amino acids** from hydrocarbons. III. L-Ornithine production by an arginine auxotrophic mutant of **Corynebacterium hydrocarboclastus** Ishu, Ryosuke; Ishii, Ryosuke; Shiio, Isamu
cf. CA 67: 89718u. The arginine auxotrophic mutant strain RN-362 of **C. hydrocarboclastus R-7** was used to study L-ornithine production from hydrocarbons, in a fermentation medium contg. various n-alkanes. L-Ornithine production required L-arginine at the optimum level of

AUTHOR(S):

CORPORATE SOURCE: Ajinomoto Co., Inc., Kawasaki, Japan

SOURCE: J. Gen. Appl. Microbiol. (1967), 13(3), 3303-12

CODEN: JGAMA9

DOCUMENT TYPE: Journal

LANGUAGE: English

TI **Microbial production of amino acids**
from hydrocarbons. III. L-Ornithine production by an arginine auxotrophic mutant of **Corynebacterium hydrocarboclastus**
AB cf. CA 67: 89718u. The arginine auxotrophic mutant strain RN-362 of **C. hydrocarboclastus R-7** was used to study L-ornithine production from hydrocarbons, in a fermentation medium contg. various n-alkanes. L-Ornithine production required L-arginine at the optimum level of

0.5-1.0 g./l. of medium; an excess inhibited the biosynthesis of L-ornithine. (NH₄)₂HPO₄ was the best source of N and, at 2% in a neutral to slightly acidic pH, gave the highest level of L-ornithine production and cell

drop growth; NH_4OAc , KNO_3 , and $(\text{NH}_4)_2\text{CO}_3$ proved less suitable because of a drop in pH along with the accumulation of a large amt. of .alpha.-ketoglutaric acid, pyruvic acid, and proline in the growth medium. Of 17 C sources, n-tetradecane best supported cell growth and L-ornithine production and the other C_{13} - C_{17} n-alkanes did so moderately, while kerosene and light oil produced good cell growth but only a small amt. of L-ornithine.

Addn. of 3 g. yeast ext. and 0.5 g. L-arginine-HCl to 1 l. of medium enhanced L-ornithine production. A similar effect was achieved by replacing the yeast ext. with various **amino acids** at 0.01% in the medium. L-Methionine was most effective for the production of L-ornithine, while L-lysine, L-cysteine, L-cystine, L-histidine, and L-phenylalanine were less so, in decreasing order. **Amino acids** enhance L-ornithine production by stimulating hydrocarbon oxidn. and cell growth.

ST HYDROCARBONS USE BACTERIA; BACTERIA HYDROCARBONS USE; ALKANES USE BACTERIA; **AMINO ACIDS** PROD N HYDROCARBONS; ORNITHINE PROD N HYDROCARBONS; PARAFFINS UTILIZATION BACTERIA

IT **Corynebacterium**

(hydrocarboclastus, ornithine formation from hydrocarbons by)

IT Hydrocarbons, biological studies

RL: BIOL (Biological study)

(ornithine formation from, by **Corynebacterium hydrocarboclastus**)

IT 70-26-8

RL: FORM (Formation, nonpreparative)

(formation of, from hydrocarbons by **Corynebacterium hydrocarboclastus**)

L14 ANSWER 24 OF 26 CAPLUS COPYRIGHT 2001 ACS

ACCESSION NUMBER: 1967:489718 CAPLUS

DOCUMENT NUMBER: 67:89718

TITLE: **Microbial production of amino acids** from hydrocarbons. II. Isolation of good hydrocarbon utilizers and amino acid production by their auxotrophs

AUTHOR(S): Ishii, Ryosuke; Otsuka, Shinichiro; Shio, Isamu
CORPORATE SOURCE: Central Res. Labs., Ajinomoto Co., Inc., Kawasaki, Japan

SOURCE: J. Gen. Appl. Microbiol. (1967), 13(2), 217-25
CODEN: JGAMA9

DOCUMENT TYPE: Journal

LANGUAGE: English

TI **Microbial production of amino acids**
acid from hydrocarbons. II. Isolation of good hydrocarbon utilizers and amino

production by their auxotrophs

AB cf. CA 59: 14313h. Nine microorganisms, which showed good growth on long-chain aliphatic hydrocarbons, were isolated by an enrichment culture method, followed by a single colony isolation technique. They included 5 strains of *Alcaligenes marshallii*, 2 strains of **Corynebacterium hydrocarboclastus**, and 2 strains of yeast. Various auxotrophic mutants were derived from these microorganisms. The mutants accumulated the following **amino acids** from aliphatic hydrocarbons; L-ornithine, L-valine, L-glutamic acid, L-leucine, L-tyrosine, L-alanine, L-proline, L-aspartic acid, and L-lysine.

ST BACTERIA AMINO ACID PROD N; AMINO ACID PROD N BACTERIA; HYDROCARBONS

AMINO ACIDS; ALIPHATIC BACTERIA METAB

IT **Corynebacterium**
(hydrocarboclastus, amino acid fermentation of hydrocarbons by)
IT **Amino acids**, preparation
RL: BMF (Bioindustrial manufacture); BIOL (Biological study); PREP
(Preparation)
(manuf. of, by fermentation of hydrocarbons)

L14 ANSWER 25 OF 26 CAPLUS COPYRIGHT 2001 ACS

ACCESSION NUMBER: 1966:22870 CAPLUS

DOCUMENT NUMBER: 64:22870

ORIGINAL REFERENCE NO.: 64:4230g-h,4231a

TITLE: **Microbial production of nucleotides**

INVENTOR(S): Masuo, Eitaro; Okabayashi, Tadashi

PATENT ASSIGNEE(S): Shionogi & Co., Ltd.

SOURCE: 10 pp.

DOCUMENT TYPE: Patent

LANGUAGE: Unavailable

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 40010957		19650601	JP	19591214

TI **Microbial production of nucleotides**

AB Some bacteria strains of high nucleotide-forming activity were detected based on the results of the test developed by the authors, and comps. of media for promoting accumulation of nucleotides were also investigated. To evaluate the nucleotide-forming activity of bacteria, cells of nonexacting purine (I) auxotrophic mutant B 96 of Escherichia coli were mixed into the synthetic medium contg. no I for testing strains. The activity of nucleotide accumulation of the strains increased as the growth

of the mutant increased. By this procedure, the following strains were found to be suitable for nucleotide production: Bacillus subtilis IFO 3061, B. firmus IFO 3330, B. circulans IFO 3342, B. megaterium IFO 3003, Alcaligenes viscosus AN-14, A. metalcaligenes 1021, Serratia marcescens 1008, S. plymuthica IFO 3055, Bacterium ketoglutaricum 1041, and new species of Brevibacterium and **Corynebacterium**. For promoting nucleotide production with these strains, **amino acids**, esp. L-glutamic acid (II), are necessary in the medium. Proteins or peptides contg. II are also effective for the strains having sufficient protease. Sufficient content of PO43- at pH 5.0-7.5 is also necessary

for the medium. By cultivation under these conditions, AMP, CDP, UMP, and UDP are obtained.

L14 ANSWER 26 OF 26 CAPLUS COPYRIGHT 2001 ACS

ACCESSION NUMBER: 1963:476777 CAPLUS

DOCUMENT NUMBER: 59:76777

ORIGINAL REFERENCE NO.: 59:14313h,14314a

TITLE: **Microbial production of amino acids** from hydrocarbons. I. Preliminary screening of glutamic acid-producing bacteria

AUTHOR(S): Shiio, Isamu; Otsuka, Shinichiro; Ishii, Ryosuke;

CORPORATE SOURCE: Katsuya, Nobu; Iizuka, Hiroshi
SOURCE: Ajinomoto Co., Inc., Kawasaki, Japan
DOCUMENT TYPE: J. Gen. Appl. Microbiol. (Tokyo) (1963), 9, 23-30
LANGUAGE: Journal
Unavailable

- TI **Microbial production of amino acids**
from hydrocarbons. I. Preliminary screening of glutamic acid-producing bacteria
- AB Various bacteria utilized kerosene, light oil, heavy oil, and liquid paraffin as the only C source for growth and formation of L-glutamic acid (I). The highest level of I (281 .gamma./ml.) was obtained from kerosene by a strain of **Corynebacterium hydrocarboclastus**.

=> dis L15 1-13 ibib kwic

L15 ANSWER 1 OF 13 BIOSIS COPYRIGHT 2001 BIOSIS

ACCESSION NUMBER: 2001:314459 BIOSIS
DOCUMENT NUMBER: PREV200100314459
TITLE: Effect of gluconic acid as a secondary carbon source on non-growing L-**lysine** producers cells of **Corynebacterium glutamicum**. Purification and properties of 6-phosphogluconate dehydrogenase.

AUTHOR(S): Bianchi, Daniella; Bertrand, Olivier; Haupt, Karsten; Cello, Nereida (1)

CORPORATE SOURCE: (1) Instituto de Biologia Experimental, Universidad Central
deVenezuela, Caracas, 1041-A: nccello@uole.com.ve
Venezuela

SOURCE: Enzyme and Microbial Technology, (June 7, 2001) Vol. 28, No. 9-10, pp. 754-759. print.
ISSN: 0141-0229.

DOCUMENT TYPE: Article
LANGUAGE: English
SUMMARY LANGUAGE: English

- TI Effect of gluconic acid as a secondary carbon source on non-growing L-**lysine** producers cells of **Corynebacterium glutamicum**. Purification and properties of 6-phosphogluconate dehydrogenase.
- AB We studied the production of L-**lysine** in **Corynebacterium glutamicum** ATCC 21543 non growing cells obtained by nutrient limitation. Statistical analysis revealed significant differences in the L-**lysine** titers of glucose, gluconic acid or glucose-gluconic acid cultures. Higher L-**lysine** titer obtained in batch cultures with mixed carbon sources or gluconic acid alone were found to be associated with a . . . dehydrogenase activity (6PGDH, E.C.1.1.1.44). This enzyme is a pivotal enzyme within the hexose monophosphate pathway, and thus of importance for L-**lysine** production. 6PGDH was purified and characterized. The purified enzyme migrates as a single band on sodium dodecyl sulfate-polyacrylamide gel electrophoresis. . .

IT . . .
Bioprocess Engineering; Methods and Techniques; Nutrition

IT Chemicals & Biochemicals
6-phosphogluconate dehydrogenase: amino acid sequence, analysis, molecular properties, pH, purification; L-**lysine**:
microbial production, yield; **amino acids**: analysis; carbon sources; gluconic acid: secondary carbon source

ORGN . . .

Microorganisms; Irregular Nonsporing Gram-Positive Rods: Actinomycetes
and Related Organisms, Eubacteria, Bacteria, Microorganisms;
Microorganisms

ORGN Organism Name

Bacillus subtilis (Endospore-forming Gram-Positives);
Corynebacterium glutamicum (Irregular Nonsporing Gram-Positive
Rods): non-growing cells; Escherichia coli (Enterobacteriaceae);
bacteria (Bacteria); microorganisms (Microorganisms)

ORGN Organism Superterms

Bacteria; Eubacteria; Microorganisms
RN 9001-82-5Q (6-PHOSPHOGLUCONATE DEHYDROGENASE)
9073-95-4Q (6-PHOSPHOGLUCONATE DEHYDROGENASE)
56-87-1 (L-**LYSINE**)
526-95-4 (GLUCONIC ACID)

L15 ANSWER 2 OF 13 BIOSIS COPYRIGHT 2001 BIOSIS

ACCESSION NUMBER: 2001:174925 BIOSIS

DOCUMENT NUMBER: PREV200100174925

TITLE: MALDI-TOF MS for quantification of substrates and products
in cultivations of **Corynebacterium** glutamicum.

AUTHOR(S): Wittmann, Christoph (1); Heinzle, Elmar

CORPORATE SOURCE: (1) Biochemical Engineering Institute, Saarland
University,

66041, Saarbruecken: c.wittmann@rz.uni-sb.de Germany
Biotechnology and Bioengineering, (March 20, 2001) Vol.

72,

No. 6, pp. 642-647. print.

ISSN: 0006-3592.

DOCUMENT TYPE: Article

LANGUAGE: English

SUMMARY LANGUAGE: English

TI MALDI-TOF MS for quantification of substrates and products in
cultivations

of **Corynebacterium** glutamicum.

AB The application of MALDI-TOF MS for the quantification of **lysine**
, alanine, and glucose is described. The method is based on using stable
isotopes as internal standards and allows fast, sensitive, . . .
concentrations of the analytes between 10 mM and 100 mM. The mean
standard deviations from five replicates each were 4.3% (**lysine**
, 3.7% (alanine), and 3.2% (glucose). In addition, sucrose could be
measured by MALDI-TOF MS, but was not quantified due to. . .

IT Major Concepts

Biochemistry and Molecular Biophysics; Bioprocess Engineering; Methods
and Techniques

IT Chemicals & Biochemicals

amino acids: microbial production

, quantitative analysis; products: quantitative analysis; substrates:
quantitative analysis

L15 ANSWER 3 OF 13 CAPLUS COPYRIGHT 2001 ACS

ACCESSION NUMBER: 2000:761605 CAPLUS

DOCUMENT NUMBER: 134:99608

TITLE: Development and use of miniaturized parallel
experiment technology for bioprocess development

AUTHOR(S): Altenbach-Rehm, Jutta

CORPORATE SOURCE: Institut fur Biotechnologie, Juelich, JUL-3782,
Germany

SOURCE: Ber. Forschungszent. Juelich (2000), Juel-3782, a-f,

i-iv, 1-233

CODEN: FJBEE5; ISSN: 0366-0885

DOCUMENT TYPE:

Report

LANGUAGE:

German

AB The fed-batch technique is nowadays the std. operation mode for high performance **microbial prodn.** processes. Shake flasks are widely used a simple bioreactors in batch process development. Because of uncontrolled changes in pH and reduced oxygen transfer rates parallel operated shake flasks can usually not be applied for microbial fed-batch process development. Due to the need to operate controlled stirred tank reactors the development of specific fermn. strategies is expensive and time consuming. To address these issues a miniature fed-batch technique was developed in cooperation with DASGIP mbH, Julich, and INFORS AG, Basel. Controlled batch and fed-batch fermns. can be performed in 16 parallel small scale bioreactors. The new technique allows the feeding of up to 4 different substrates and parallel pH control based on user-defined profiles. The feeding assembly is sterilized chem. using dimethylcarbonate. To overcome the limitations of shake flasks, small scale bubble columns were developed. Gas distribution is performed with a new type of sterile sparger. Transferring fed-batch fermns. from small scale bubble columns to a stirred tank reactor a scale up factor of 20 was achieved. *Escherichia coli* K12 was chosen to test the new

parallel bioreactor technique. Compared to shake flask fermns. the cell concn. was

50% higher due to efficient oxygen transfer. In fed-batch fermns. with pH-controlled substrate feeding up to 35 g/l DCW were achieved. For the 1st time, a parallel optimization of feeding profiles in parallel small scale fed-batch expts. with successful scale-up to a lab. bioreactor was performed. *Escherichia coli* BL 21 (DE3) *plysS* produces the recombinant enzyme GDP-.alpha.-D-mannose-pyrophosphorylase after induction with isopropyl-.beta.-D-thiogalactoside (IPTG). Single induction with 0,5 mM IPTG resulted in a low specific enzyme activity of 1,6 U/g DCW (dry cell wt.). For the optimization of enzyme expression a genetic algorithm was used. A final enzyme activity of 111 U/g DCW was achieved for optimal substrate and inducer feeding profiles. To demonstrate the advantages of this new parallel bioreactor technique different strains of industrial relevance were investigated. *Corynebacterium glutamicum*, *Staphylococcus carnosus* and *Ashbya gossypii*.

ST bioreactor bubble column fed batch fermn; GDP mannose pyrophosphorylase bubble column fed batch; *Staphylococcus* bubble column fed batch fermn; isoleucine bubble column fed batch *Corynebacterium*; riboflavin bubble column fed batch *Ashbya*

IT **Amino acids**, biological studies

RL: BPR (Biological process); BIOL (Biological study); PROC (Process) (amino acid consumption in riboflavin prodn. by *Ashbya gossypii* in parallel bubble columns with fed-batch technique)

IT *Corynebacterium glutamicum*

(L-isoleucine prodn. by *Corynebacterium glutamicum* in parallel bubble columns with fed-batch technique)

IT 56-40-6, Glycine, biological studies 56-41-7, Alanine, biological studies 56-45-1, Serine, biological studies 56-84-8, Aspartic acid, biological studies 56-85-9, Glutamine, biological studies 56-86-0, Glutamic acid, biological studies 56-87-1, **Lysine**, biological studies 60-18-4, Tyrosine, biological studies 63-68-3, Methionine, biological studies 63-91-2, Phenylalanine, biological studies

72-18-4,

Valine, biological studies 72-19-5, Threonine, biological studies
 73-22-3, Tryptophane, biological studies
 RL: BPR (Biological process); BIOL (Biological study); PROC (Process)
 (amino acid consumption in riboflavin prodn. by *Ashybya gossypii* in
 parallel bubble columns with fed-batch technique)

IT 73-32-5P, L-Isoleucine, biological studies
 RL: BMF (Bioindustrial manufacture); BPR (Biological process); BIOL
 (Biological study); PREP (Preparation); PROC (Process)
 (L-isoleucine prodn. by *Corynebacterium glutamicum* in
 parallel bubble columns with fed-batch technique, amino acid
 consumption in riboflavin prodn. by *Ashybya gossypii*)

IT 61-90-5, L-Leucine, biological studies
 RL: BPR (Biological process); MFM (Metabolic formation); BIOL (Biological
 study); FORM (Formation, nonpreparative); PROC (Process)
 (L-isoleucine prodn. by *Corynebacterium glutamicum* in
 parallel bubble columns with fed-batch technique, amino acid
 consumption in riboflavin prodn. by *Ashybya gossypii*)

L15 ANSWER 4 OF 13 CAPLUS COPYRIGHT 2001 ACS

ACCESSION NUMBER: 1999:244776 CAPLUS

DOCUMENT NUMBER: 130:266420

TITLE: Method for **microbial production of amino acids** of the aspartate and/or glutamate family and agents which can be used in said method

INVENTOR(S): Eikmanns, Bernd; Peters-Wendisch, Petra; Sahm, Hermann

PATENT ASSIGNEE(S): Forschungszentrum Julich G.m.b.H., Germany

SOURCE: PCT Int. Appl., 40 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9918228	A2	19990415	WO 1998-EP6210	19980930
WO 9918228	A3	19990520		
W: AU, BR, CA, CN, HU, ID, JP, KR, MX, RU, SK, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
DE 19831609	A1	19990415	DE 1998-19831609	19980714
AU 9911482	A1	19990427	AU 1999-11482	19980930
EP 1015621	A2	20000705	EP 1998-954301	19980930
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
BR 9813021	A	20000815	BR 1998-13021	19980930
PRIORITY APPLN. INFO.:			DE 1997-19743894	A 19971004
			DE 1998-19831609	A 19980714
			WO 1998-EP6210	W 19980930

TI Method for **microbial production of amino acids** of the aspartate and/or glutamate family and agents which can be used in said method

AB The invention relates to a method for **microbial prodn. of amino acids** of the aspartate and/or glutamate family in which the pyruvate carboxylase activity is increased by genetically changing the enzyme and/or the pyruvate carboxylase gene

expression of a microorganism which produces the corresponding amino acid.

In addn., the invention relates to a pyruvate carboxylase gene and addnl. agents which can be used in the inventive method.

ST amino acid fermn **Corynebacterium** pyruvate carboxylase genetic engineering

IT **Corynebacterium glutamicum**
Fermentation
(microbial prodn. of amino acids
of the aspartate and/or glutamate family and agents which can be used in said method)

IT **Amino acids**, preparation
RL: BMF (Bioindustrial manufacture); BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(microbial prodn. of amino acids
of the aspartate and/or glutamate family and agents which can be used in said method)

IT Genetic engineering
(microbial prodn. of amino acids
of the aspartate and/or glutamate family and modification of **Corynebacterium pyc** gene in said method)

IT Genes (microbial)
RL: BPR (Biological process); BIOL (Biological study); PROC (Process)
(pyc; microbial prodn. of amino acids of the aspartate and/or glutamate family and modification of **Corynebacterium pyc** gene in said method)

IT 56-86-0P, L-Glutamic acid, preparation 56-87-1P, L-Lysine, preparation 72-19-5P, L-Threonine, preparation 74-79-3P, L-Arginine, preparation 672-15-1P, L-Homoserine
RL: BMF (Bioindustrial manufacture); BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(microbial prodn. of amino acids
of the aspartate and/or glutamate family and agents which can be used in said method)

IT 9014-19-1, Pyruvate carboxylase 204116-18-7 208541-81-5
RL: BSU (Biological study, unclassified); BIOL (Biological study)
(microbial prodn. of amino acids
of the aspartate and/or glutamate family and agents which can be used in said method)

L15 ANSWER 5 OF 13 BIOSIS COPYRIGHT 2001 BIOSIS

ACCESSION NUMBER: 1999:175414 BIOSIS

DOCUMENT NUMBER: PREV199900175414

TITLE: Cloning of the transketolase gene and the effect of its dosage on aromatic amino acid production in **Corynebacterium glutamicum**.

AUTHOR(S): Ikeda, M. (1); Okamoto, K.; Katsumata, R.

CORPORATE SOURCE: (1) Technical Research Laboratories, Kyowa Hakko Kogyo Co.,

Ltd., Hofu, Yamaguchi, 747-8522 Japan

SOURCE: Applied Microbiology and Biotechnology, (Feb., 1999) Vol. 51, No. 2, pp. 201-206.

ISSN: 0175-7598.

DOCUMENT TYPE: Article

LANGUAGE: English

TI Cloning of the transketolase gene and the effect of its dosage on aromatic

amino acid production in **Corynebacterium glutamicum**.

AB. . . enzyme of the non-oxidative pentose phosphate pathway. The effect of

its overexpression on aromatic amino acid production was investigated in **Corynebacterium glutamicum**, a typical amino-acid-producing organism. For this purpose, the transketolase gene of the organism was cloned on the basis of. . . as a protein of approximately 83kDa in proportion to the copy numbers. Introduction of the plasmids into a tryptophan and **lysine** co-producer resulted in copy-dependent increases in tryptophan production along with concomitant decreases in **lysine** production. Furthermore, the presence of the gene in high copy numbers enabled tyrosine, phenylalanine and tryptophan producers to accumulate 5%-20% more aromatic **amino acids**. These results indicate that overexpressed transketolase activity operates to redirect the glycolytic intermediates toward the nonoxidative pentose phosphate pathway in. . .

IT Major Concepts

Bioprocess Engineering; Enzymology (Biochemistry and Molecular Biophysics); Molecular Genetics (Biochemistry and Molecular

Biophysics)

IT Chemicals & Biochemicals

aromatic **amino acids**: **microbial**

production; transketolase [EC 2.2.1.1]; **Corynebacterium** transketolase gene (Irregular Nonsporing Gram-Positive Rods)

L15 ANSWER 6 OF 13 CAPLUS COPYRIGHT 2001 ACS

ACCESSION NUMBER: 1995:674124 CAPLUS

DOCUMENT NUMBER: 123:54314

TITLE: Enhancement of reduced NADP production for enhanced **microbial production** of biochemicals

INVENTOR(S): Kojima, Hiroyuki; Totsuka, Kazuhiko

PATENT ASSIGNEE(S): Ajinomoto Co., Inc., Japan

SOURCE: PCT Int. Appl., 32 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9511985	A1	19950504	WO 1994-JP1791	19941026
W: AU, BR, CA, CN, CZ, HU, JP, KR, PL, RU, SK, US, VN				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
CA 2175042	AA	19950504	CA 1994-2175042	19941026
AU 9480026	A1	19950522	AU 1994-80026	19941026
AU 687458	B2	19980226		
EP 733712	A1	19960925	EP 1994-931158	19941026
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT,				

SE

BR 9407907	A	19961126	BR 1994-7907	19941026
HU 74840	A2	19970228	HU 1996-1085	19941026
ZA 9503350	A	19961025	ZA 1995-3350	19950425
US 5830716	A	19981103	US 1996-619521	19960429
CN 1139956	A	19970108	CN 1994-194707	19961026

PRIORITY APPLN. INFO.:

JP 1993-270828 19931028
WO 1994-JP1791 19941026

TI Enhancement of reduced NADP production for enhanced **microbial production** of biochemicals

AB The productivity of such substances as L-**amino acids**, antibiotics, vitamins, growth factors and physiol. active substances in the fermn. using a microorganism is improved by improving the productivity of reduced NADP in the cells of the microorganisms. Construction of pMW::THY contg. the Escherichia coli transhydrogenase gene, and introduction of the plasmid into the L-threonine-producing Escherichia coli B-3996 were shown. The recombinant E. coli B-3996 produced L-threonine .apprx.10% higher than did the parental strain.

IT **Corynebacterium glutamicum**
Escherichia coli
Fermentation
(enhancement of reduced NADP prodn. for enhanced **microbial prodn.** of biochems.)

IT **Amino acids**, preparation
RL: BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(enhancement of reduced NADP prodn. for enhanced **microbial prodn.** of biochems.)

IT Plasmid and Episome
(pHSG::THY; enhancement of reduced NADP prodn. for enhanced **microbial prodn.** of biochems.)

IT Plasmid and Episome
(pMW::THY; enhancement of reduced NADP prodn. for enhanced **microbial prodn.** of biochems.)

IT Plasmid and Episome
(pSU::THY; enhancement of reduced NADP prodn. for enhanced **microbial prodn.** of biochems.)

IT 9014-18-0, Nicotinamide nucleotide transhydrogenase
RL: BAC (Biological activity or effector, except adverse); BIOL (Biological study)
(enhancement of reduced NADP prodn. for enhanced **microbial prodn.** of biochems.)

IT 56-86-0P, L-Glutamic acid, preparation 56-87-1P, L-**Lysine**, preparation 61-90-5P, L-Leucine, preparation 63-91-2P, L-Phenylalanine, preparation 72-18-4P, L-Valine, preparation 72-19-5P, L-Threonine, preparation 73-32-5P, L-Isoleucine, preparation
RL: BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(enhancement of reduced NADP prodn. for enhanced **microbial prodn.** of biochems.)

IT 53-59-8P, NADP
RL: BPN (Biosynthetic preparation); BIOL (Biological study); PREP (Preparation)
(reduced; enhancement of reduced NADP prodn. for enhanced **microbial prodn.** of biochems.)

L15 ANSWER 7 OF 13 SCISEARCH COPYRIGHT 2001 ISI (R)
ACCESSION NUMBER: 95:184306 SCISEARCH
THE GENUINE ARTICLE: QK574
TITLE: METABOLIC DESIGN IN AMINO-ACID PRODUCING BACTERIUM **CORYNEBACTERIUM-GLUTAMICUM**
SAHM H (Reprint); EGGELING L; EIKMANN B; KRAMER R
CORPORATE SOURCE: KFA JULICH GMBH, FORSCHUNGSZENTRUM, INST BIOTECHNOL, D-52425 JULICH, GERMANY (Reprint)
COUNTRY OF AUTHOR: GERMANY
SOURCE: FEMS MICROBIOLOGY REVIEWS, (FEB 1995) Vol. 16, No. 2-3,

pp. 243-252.
ISSN: 0168-6445.

DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE
LANGUAGE: ENGLISH
REFERENCE COUNT: 36

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

TI METABOLIC DESIGN IN AMINO-ACID PRODUCING BACTERIUM **CORYNEBACTERIUM**
-GLUTAMICUM

AB The Gram-positive bacterium **Corynebacterium glutamicum** is used for the industrial production of **amino acids**, e.g. of L-glutamate and L-**lysine**. In the last 10 years, genetic engineering and amplification of relevant structural genes have become fascinating methods for the construction of strains with desired genotypes. By cloning and expressing the various genes of the L-**lysine** pathway in *C. glutamicum* we could demonstrate that an increase of the flux of L-aspartate semialdehyde to L-**lysine** could be obtained in strains with increased dehydrodipicolinate synthase activity. By combined overexpression of deregulated aspartate kinase and dihydrodipicolinate synthase, the L-**lysine** secretion could be increased (10-20%). Recently we detected that in *C. glutamicum* two pathways exist for the synthesis of DL-diaminopimelate and L-**lysine**. Mutants defective in one pathway are still able to synthesize enough L-**lysine** for growth, but the L-**lysine** secretion is reduced to 50-70%. Using NMR spectroscopy, we could calculate

how much of the L-**lysine** secreted into the medium is synthesized via each pathway. Amplification of the feedback inhibition-insensitive homoserine dehydrogenase and homoserine kinase in a high L-**lysine** overproducing strain enabled channelling of the carbon flow from the intermediate aspartate semialdehyde towards homoserine, resulting in a high accumulation. . . . acid overproduction, the secretion into the culture medium also has to be noted. Recently it could be demonstrated that L-glutamate, L-**lysine** and L-isoleucine are not secreted via passive diffusion but via specific active carrier systems. Analysis of **lysine**-overproducing *C. glutamicum* strains indicates that this secretion carrier has a strong influence on the overproduction of this amino acid. Thus,

ST Author Keywords: **CORYNEBACTERIUM** GLUTAMICUM; AMINO ACID
PRODUCTION; METABOLIC DESIGN; L-**LYSINE**; L-THREONINE;
L-ISOLEUCINE

STP KeyWords Plus (R): L-THREONINE; L-**LYSINE**; BREVIBACTERIUM-
LACTOFERMENTUM; HOMOSERINE DEHYDROGENASE; **MICROBIAL**
PRODUCTION; RESISTANT MUTANTS; SPLIT PATHWAY; BIOSYNTHESIS;
ISOLEUCINE; GENES

L15 ANSWER 8 OF 13 SCISEARCH COPYRIGHT 2001 ISI (R)
ACCESSION NUMBER: 96:7187 SCISEARCH
THE GENUINE ARTICLE: TJ545
TITLE: METABOLIC DESIGN IN THE AMINO-ACID-PRODUCING BACTERIUM
CORYNEBACTERIUM-GLUTAMICUM
AUTHOR: SAHM H (Reprint)
CORPORATE SOURCE: KFA JULICH GMBH, FORSCHUNGSZENTRUM, INST BIOTECHNOL,
D-52425 JULICH, GERMANY (Reprint)
COUNTRY OF AUTHOR: GERMANY
SOURCE: FOLIA MICROBIOLOGICA, (1995) Vol. 40, No. 1, pp. 23-30.
ISSN: 0015-5632.
DOCUMENT TYPE: Article; Journal

FILE SEGMENT: LIFE; AGRI
LANGUAGE: ENGLISH
REFERENCE COUNT: 26

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

TI METABOLIC DESIGN IN THE AMINO-ACID-PRODUCING BACTERIUM
CORYNEBACTERIUM-GLUTAMICUM

AB The Gram-positive bacterium *Corynebacterium glutamicum* is used for the industrial production of amino acids, e.g. of L-glutamate and L-lysine. By cloning and expressing the various genes of the L-lysine pathway in *C. glutamicum* we could demonstrate that an increase of the flux of L-4-aspartaldehyde to L-lysine could be obtained in strains with increased dihydro-dipicolinate synthase activity. Recently we detected that in *C. glutamicum* two pathways exist for the synthesis of DL-2,6-diaminopimelate and L-lysine. Mutants defective in one pathway are still able to synthesize enough L-lysine for growth but the L-lysine secretion is reduced to 50-70 %. Using NMR-spectroscopy we could calculate

how much of the L-lysine secreted into the medium is synthesized via the one and the other pathway. Amplification of the feedback-inhibition-insensitive-homoserine dehydrogenase and homoserine kinase in a high L-lysine-overproducing strain made it possible to channel the carbon now from the intermediate 4-aspartaldehyde toward homoserine, resulting in a high.

STP KeyWords Plus (R): L-THREONINE; BREVIBACTERIUM-LACTOFERMENTUM; HOMOSERINE DEHYDROGENASE; MICROBIAL PRODUCTION; LYSINE BIOSYNTHESIS; RESISTANT MUTANTS; SPLIT PATHWAY; GENES; AMPLIFICATION; FERMENTATION

L15 ANSWER 9 OF 13 CAPLUS COPYRIGHT 2001 ACS

ACCESSION NUMBER: 1985:436156 CAPLUS

DOCUMENT NUMBER: 103:36156

TITLE: Optimization of amino acid production by automatic self-tuning digital control of redox potential
AUTHOR(S): Radjai, Mohammad K.; Hatch, Randolph T.; Cadman, Theodore W.

CORPORATE SOURCE: Dep. Chem. Nucl. Eng., Univ. Maryland, College Park, MD, 20742, USA

SOURCE: Biotechnol. Bioeng. Symp. (1984), 14(Symp. Biotechnol.

Fuels Chem., 6th), 657-79

CODEN: BIBSBR; ISSN: 0572-6565

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The microbial prodn. of homoserine [672-15-1], lysine [56-87-1], and valine [72-18-4] by an auxotrophic mutant of *Corynebacterium glutamicum* was investigated in a 16-L batch fermentor. Closed-loop digital control of redox potential was implemented using proportional-integral (PI) control of agitation rates. Due to the nonlinearity of the system, the PI controller parameters had to be changed during the course of the ferms. An automatic, self-tuning algorithm was developed for stable control of redox potential. This permitted exptl. optimization of total and selective amino acid prodn. Total amino acid yields of 35% from glucose were achieved compared to 23% reported in the literature for the same ferms.

ST amino acid ferms redox potential control; optimization simulation

homoserine lysine valine fermn
 IT **Corynebacterium glutamicum**
 (amino acid manuf. with, optimization and redox potential control in)
 IT **Amino acids**, preparation
 RL: BMF (Bioindustrial manufacture); BIOL (Biological study); PREP
 (Preparation)
 (manuf. of, by fermn.)

L15 ANSWER 10 OF 13 MEDLINE
 ACCESSION NUMBER: 79079819 MEDLINE
 DOCUMENT NUMBER: 79079819 PubMed ID: 727028
 TITLE: **Microbial production** of essential amino
 acid with **Corynebacterium glutamicum** mutants.
 AUTHOR: Nakayama K; Araki K; Kase H
 SOURCE: ADVANCES IN EXPERIMENTAL MEDICINE AND BIOLOGY, (1978) 105
 649-61.
 Journal code: 2LU; 0121103. ISSN: 0065-2598.
 PUB. COUNTRY: United States
 Journal; Article; (JOURNAL ARTICLE)
 LANGUAGE: English
 FILE SEGMENT: Priority Journals
 ENTRY MONTH: 197902
 ENTRY DATE: Entered STN: 19900314
 Last Updated on STN: 19970203
 Entered Medline: 19790212

TI **Microbial production** of essential amino acid with
Corynebacterium glutamicum mutants.
 AB **Amino acids** produced by microbial process are
 generally L-forms. The stereospecificity of the **amino**
acids produced by fermentation makes the process advantageous
 compared with synthetic process. Microorganisms employed in microbial
 process for amino acid production are divided into 4 classes; wild-type
 strain, auxotrophic mutant, regulatory mutant and auxotrophic regulatory
 mutant. Using such mutants of **Corynebacterium glutamicum**, all
 the essential **amino acids** but L-methionine are now
 being produced by "direct fermentation" from cheap carbon sources such as
 carbohydrate materials or acetic acid.
 CT ***Amino Acids, Essential: BI, biosynthesis**
***Corynebacterium: ME, metabolism**
 Fermentation
 Kinetics
 Leucine: BI, biosynthesis
Lysine: BI, biosynthesis
 Mutation
 Phenylalanine: BI, biosynthesis
 Species Specificity
 Stereoisomerism
 Threonine: BI, biosynthesis
 Tryptophan: BI, biosynthesis
 RN 3617-44-5 (Phenylalanine); **56-87-1 (Lysine)**; 7005-03-0
 (Leucine); 72-19-5 (Threonine); 73-22-3 (Tryptophan)
 CN 0 (**Amino Acids, Essential**)

L15 ANSWER 11 OF 13 CAPLUS COPYRIGHT 2001 ACS
 ACCESSION NUMBER: 1970:508239 CAPLUS
 DOCUMENT NUMBER: 73:108239
 TITLE: **Microbial production** of
 L-threonine

INVENTOR(S): Nakayama, Kiyoshi; Kase, Hiroshi
 PATENT ASSIGNEE(S): Kyowa Fermentation Industry Co. Ltd.
 SOURCE: Ger. Offen., 22 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	DE 1817666	A	19700827	DE 1968-1817666	19681224
TI	Microbial production of L-threonine				
AB	Various microorganisms, e.g. Aerobacter [Enterobacter] aerogenes, Serratia				
	marcescens, or Arthrobacter paraffineus, cultured for producing L-threonine required 2 or 3 of the amino acids isoleucine, methionine, lysine, or diaminopimelic acid. The microorganisms were cultured aerobically in an aq. medium contg. the optimal (or less) amts. of the required amino acids. Thus, E. aerogenes NM-IS-5 (ATCC 21,215) was cultured 96 hr at 30.degree. in medium contg. glucose 5, (NH4)2SO4 1.4, KH2PO4 0.05, K2HPO4 0.05, MgSO4.7H2O 0.025, FeSO4.7H2O 0.001, MnSO4.4H2O 0.001, and CaCO3 2% and isoleucine 50, methionine 100, and diaminopimelic acid 200 mg/l. to give 7.8 g L-threonine/l.				
ST	microbial prodn threonine; threonine microbial prodn ; Aerobacter threonine fermn; amino acid prodn fermn				
IT	Corynebacterium (glutamicum, threonine manuf. by)				

L15 ANSWER 12 OF 13 CAPLUS COPYRIGHT 2001 ACS

ACCESSION NUMBER: 1967:514494 CAPLUS

DOCUMENT NUMBER: 67:114494

TITLE: **Microbial production of amino acids** from hydrocarbons. III. L-Ornithine production by an arginine auxotrophic mutant of **Corynebacterium hydrocarboclastus**
 AUTHOR(S): Ishu, Ryosuke; Ishii, Ryosuke; Shiio, Isamu
 CORPORATE SOURCE: Ajinomoto Co., Inc., Kawasaki, Japan
 SOURCE: J. Gen. Appl. Microbiol. (1967), 13(3), 3303-12
 CODEN: JGAMA9

DOCUMENT TYPE: Journal

LANGUAGE: English

TI **Microbial production of amino acids** from hydrocarbons. III. L-Ornithine production by an arginine auxotrophic mutant of **Corynebacterium hydrocarboclastus**
 AB cf. CA 67: 89718u. The arginine auxotrophic mutant strain RN-362 of C. hydrocarboclastus R-7 was used to study L-ornithine production from hydrocarbons, in a fermentation medium contg. various n-alkanes. L-Ornithine production required L-arginine at the optimum level of 0.5-1.0 g./l. of medium; an excess inhibited the biosynthesis of L-ornithine. (NH4)2HPO4 was the best source of N and, at 2% in a neutral to slightly acidic pH, gave the highest level of L-ornithine production and cell growth; NH4OAc, KNO3, and (NH4)2CO3 proved less suitable because of a drop

in pH along with the accumulation of a large amt. of .alpha.-ketoglutaric acid, pyruvic acid, and proline in the growth medium. Of 17 C sources,

n-tetradecane best supported cell growth and L-ornithine production and the other C13-C17 n-alkanes did so moderately, while kerosene and light oil produced good cell growth but only a small amt. of L-ornithine.

Addn.

of 3 g. yeast ext. and 0.5 g. L-arginine-HCl to 1 l. of medium enhanced L-ornithine production. A similar effect was achieved by replacing the yeast ext. with various **amino acids** at 0.01% in the medium. L-Methionine was most effective for the production of L-ornithine, while L-lysine, L-cysteine, L-cystine, L-histidine, and L-phenylalanine were less so, in decreasing order. **Amino acids** enhance L-ornithine production by stimulating hydrocarbon oxidn. and cell growth.

ST HYDROCARBONS USE BACTERIA; BACTERIA HYDROCARBONS USE; ALKANES USE BACTERIA; **AMINO ACIDS** PRODN HYDROCARBONS; ORNITHINE PRODN HYDROCARBONS; PARAFFINS UTILIZATION BACTERIA

IT **Corynebacterium**
(hydrocarboclastus, ornithine formation from hydrocarbons by)

IT Hydrocarbons, biological studies
RL: BIOL (Biological study)
(ornithine formation from, by **Corynebacterium**
hydrocarboclastus)

IT 70-26-8
RL: FORM (Formation, nonpreparative)
(formation of, from hydrocarbons by **Corynebacterium**
hydrocarboclastus)

L15 ANSWER 13 OF 13 CAPLUS COPYRIGHT 2001 ACS

ACCESSION NUMBER: 1967:489718 CAPLUS

DOCUMENT NUMBER: 67:89718

TITLE: **Microbial production of amino acids** from hydrocarbons. II.
Isolation of good hydrocarbon utilizers and amino acid production by their auxotrophs
AUTHOR(S): Ishii, Ryosuke; Otsuka, Shinichiro; Shio, Isamu
CORPORATE SOURCE: Central Res. Labs., Ajinomoto Co., Inc., Kawasaki, Japan

SOURCE: J. Gen. Appl. Microbiol. (1967), 13(2), 217-25
CODEN: JGAMA9

DOCUMENT TYPE: Journal
LANGUAGE: English

TI **Microbial production of amino acids**
from hydrocarbons. II. Isolation of good hydrocarbon utilizers and amino acid

production by their auxotrophs

AB cf. CA 59: 14313h. Nine microorganisms, which showed good growth on long-chain aliphatic hydrocarbons, were isolated by an enrichment culture method, followed by a single colony isolation technique. They included 5 strains of *Alcaligenes marshallii*, 2 strains of **Corynebacterium** hydrocarboclastus, and 2 strains of yeast. Various auxotrophic mutants were derived from these microorganisms. The mutants accumulated the following **amino acids** from aliphatic hydrocarbons; L-ornithine, L-valine, L-glutamic acid, L-leucine, L-tyrosine, L-alanine, L-proline, L-aspartic acid, and L-lysine.

ST BACTERIA AMINO ACID PRODN; AMINO ACID PRODN BACTERIA; HYDROCARBONS **AMINO ACIDS**; ALIPHATICS BACTERIA METAB

IT **Corynebacterium**
(hydrocarboclastus, amino acid fermentation of hydrocarbons by)

IT **Amino acids**, preparation

RL: BMF (Bioindustrial manufacture); BIOL (Biological study); PREP
(Preparation)
(manuf. of, by fermentation of hydrocarbons)

=> dis his

(FILE 'HOME' ENTERED AT 18:56:31 ON 19 OCT 2001)

FILE 'BIOSIS, CAPLUS, EMBASE, MEDLINE, SCISEARCH' ENTERED AT 18:57:06 ON
19 OCT 2001

L1 2893 S MICROBIAL (W) PRODUCTION
L2 190 S L1 AND (AMINO (W) ACIDS)
L3 28 S L2 AND CORYNEBACTERIUM
L4 13 L3 AND LYSINE
L5 0 L3 AND ((EXPORT) (W) (GENE OR CARRIER))
L6 0 S L3 AND EXPORT (W) GENE
L7 166 S EXPORT (W) GENE
L8 0 S L3 AND L7
L9 0 S L3 (P) L7
L10 0 S L2 AND L7
L11 0 S L2 AND EXPORT (W) GENE
L12 61 S L7 AND MICROB?
L13 1 S L12 AND CORYNEBACTERIUM
L14 26 DUP REM L3 (2 DUPLICATES REMOVED)
L15 13 DUP REM L4 (0 DUPLICATES REMOVED)

=> log off y

Dear valued customer,

Your feedback is important to us. Would you kindly take a moment to complete our survey? This survey will only take about 5-10 minutes to complete. Your responses will be kept confidential and will help us improve STN Express with Discover! for your future use. Please click on the following link to access the survey.

<http://www.cas.org/ONLINE/STN/ExpressSurveyForm.html?LOGINID=SSSPTA1600RXM>

STN INTERNATIONAL LOGOFF AT 19:32:29 ON 19 OCT 2001